

CASE STUDY

Feather wreath lung: chasing a dead bird

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Feather wreath lung: chasing a dead bird. F.J. Meyer, P.C. Bauer, U. Costabel. ©ERS Journals Ltd 1996.

ABSTRACT: We report the case of a 50 year old clerk with chronic extrinsic allergic alveolitis due to a wreath of feathers from his dead budgerigar hanging in his living-room.

Diagnosis was confirmed by serum precipitins, bronchoalveolar lavage and open lung biopsy.

It is important to recognize unusual sources of exposure in this disease.

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Extrinsic allergic alveolitis is caused by inhalation of organic dusts or inorganic chemicals, leading to inflammation of the bronchoalveolar tissue [1, 2]. Sometimes, specific questioning is required to elicit unusual sources of antigen exposure, as illustrated by the present case.

Case report

A 50 year old, lifelong nonsmoking clerk was hospitalized with mildly progressive dyspnoea on exertion and sporadic cough with moderate sputum production of 6 months duration. Recently, episodes of dizziness and nausea had occurred. He had never been exposed to occupational dusts, and required no regular medication.

On physical examination fine, late inspiratory crackles were audible over both lung bases. The chest radiograph showed diffuse micronodular shadowing. The computed tomographic (CT) scans revealed additional areas of ground-glass densities. Laboratory studies disclosed a mildly elevated erythrocyte sedimentation rate (ESR) of 16 mm·h⁻¹. Other values were within normal limits. Precipitins against budgerigar serum were strongly positive. Lung volumes showed a restrictive impairment; *i.e.* vital capacity (VC) was 2.2 L, (51% of predicted), total lung capacity (TLC) 3.6 L (60% pred) and forced expiratory volume in one second (FEV₁) 1.8 L·s⁻¹ (56% pred). Measurements of arterial blood gases at rest revealed an arterial oxygen saturation (P_{a,O_2}) of 10.8 kPa (81 mmHg) and an arterial carbon dioxide tension (P_{a,CO_2}) of 5.5 kPa (41 mmHg). P_{a,O_2} on exercise (50 W) dropped to 9.1 kPa (68 mmHg), while P_{a,CO_2} remained at 5.6 kPa (42 mmHg). Fiberoptic bronchoscopy disclosed no abnormalities. Bronchoalveolar lavage (BAL) was performed with 10×20 mL saline in the middle lobe. Cell differentials and immunocytology revealed an excessive lymphocytosis with a low CD4/CD8 ratio, a mild increase in granulocytes, and elevated CD57+ cells (table 1). Fifteen percent of the macrophages showed a foamy cytoplasm. So far, the findings were compatible with extrinsic allergic alveolitis. However, even after repeated history

Table 1. – Bronchoalveolar lavage fluid cytology

	Patient	Normal value
Total cell count ×10 ⁶	73	<13
Cell differentials % of total cells		
Macrophages	5	>84
Lymphocytes	87	<13
Neutrophils	1.5	<3
Eosinophils	7	<0.5
Mast cells	0.1	<0.5
Plasma cells	0	0
Immunocytology % of lymphocytes		
CD4+	40	40–70
CD8+	46	20–40
CD57+	37	2–14

taking and a detailed questionnaire, the patient denied exposure to antigens.

Open lung biopsy was performed in the lingula. The histological features were consistent with an interstitial lymphocytic pneumonia with transition into interstitial pulmonary fibrosis. There was interstitial fibrous thickening and focal intra-alveolar accumulation of macrophages with a vacuolar cytoplasm, representing foamy macrophages. Vascular changes or granulomatous lesions were not present.

Only after having performed the open lung biopsy, which excluded other specific causes of interstitial disease, was it disclosed by repeated questioning of the patient's family that the patient had kept a budgerigar for 5 yrs. After the budgerigar's death 2 yrs previously, a wreath had been woven from the feathers and hung in the patient's living-room. After the diagnosis was made, the patient's family removed the wreath before the patient returned home. Before discharging him, a course of oral corticosteroids was initiated. On the occasion of an outpatient visit 4 months later, symptoms had disappeared and arterial P_{a,O_2} on exercise (50 W) had returned to normal: P_{a,O_2} 10.3 kPa (77 mmHg), P_{a,CO_2} 5.7 kPa (43 mmHg).

Discussion

This is the first study to report symptomatic extrinsic allergic alveolitis due to exposure to the feathers of a dead budgerigar. So far, there have been three case reports of extrinsic allergic alveolitis caused by exposure to duvets and pillows containing duck and goose feathers [3–5]. Interestingly, the BAL findings in our patient (table 1) were identical to those of patients exposed to antigens of living birds [6]

Exposure to antigens remains one of the corner-stones in the diagnosis of extrinsic allergic alveolitis. To discover the sometimes unusual source of antigen in the individual environment of a patient with possible extrinsic allergic alveolitis, one has to have well-developed powers of detection. The work-up in a patient with suspicion of having extrinsic allergic alveolitis should include the question "If you have kept birds in the past, what have you done with the feathers?".

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